Supplemental Material

Postmenopausal Breast Cancer is Associated with Exposure to Traffic-related Air Pollution in Montreal, Canada: A Case-Control Study

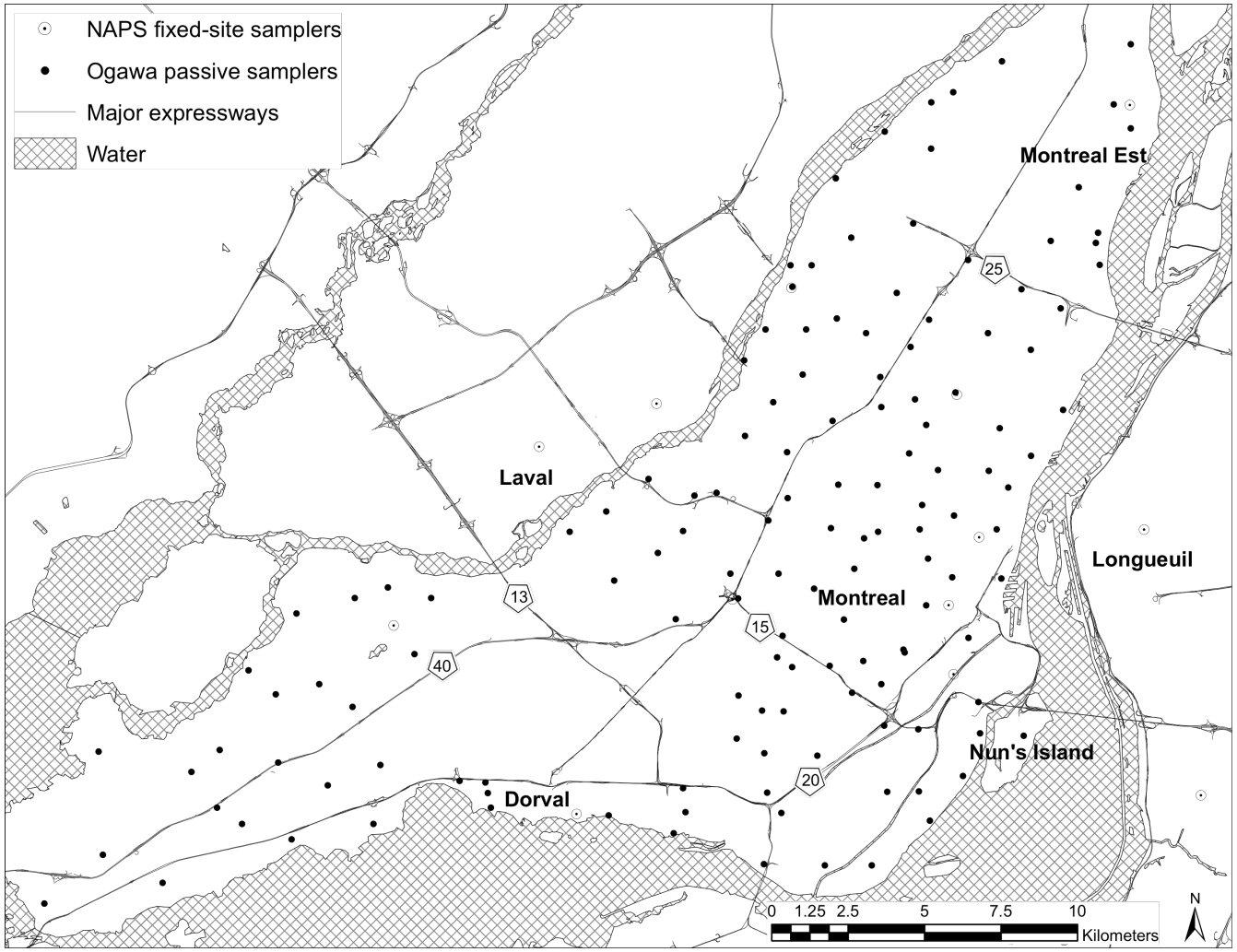
Dan L Crouse[1], Mark S Goldberg[2], Nancy A Ross[1], Hong Chen[3], France Labrèche[4]

[1.] Department of Geography, McGill University, Montreal, Quebec

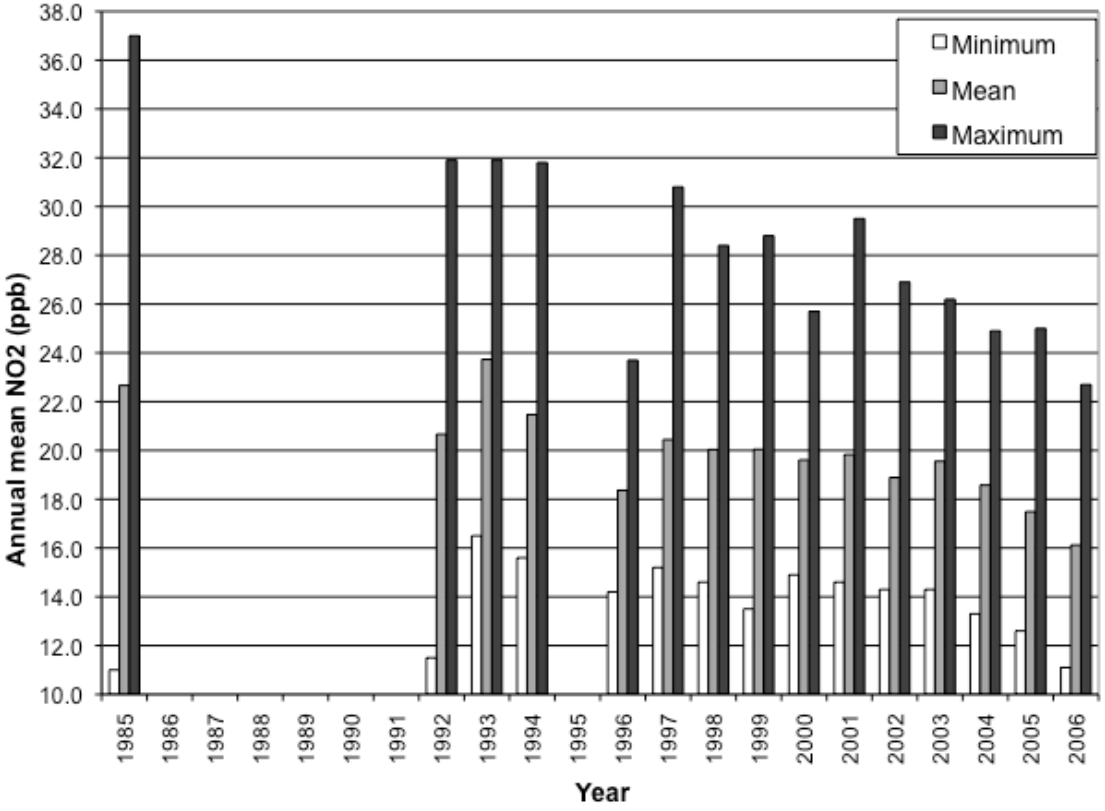
[2.] Department of Medicine, McGill University, Montreal, Quebec and Division of Clinical Epidemiology, McGill University Health Centre, Montreal, Quebec

[3.] Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Quebec

[4.] Département de médecine sociale et préventive et Département de santé environnementale et santé au travail, Université de Montréal, Montreal, Quebec



Supplemental Material, Figure 1: Locations of Ogawa passive samplers and National Air Pollution Surveillance fixed-site samplers in Montreal, Canada, 2005-2006



Supplemental Material, Figure 2: Annual mean concentrations of NO_2 (ppb) at nine fixed-site pollution samplers in Montreal, Canada, 1985 – 2006. (Years with missing data are due to insufficient data to compute annual means)

Supplemental Material, Table1: Pearson correlation coefficients (r) and 95% confidence intervals (CI) between observed concentrations of annual mean NO_2 (ppb) at fixed-site stations in Montreal, Canada, 1985 – 2006. (n ranges from 7 to 10 depending on completeness of data at individual stations in each year)

	1985		**1996**		**2006**	
Year	**r**	**95% CI**	**r**	**95% CI**	**r**	**95% CI**
1985	1		0.78	(0.23 - 0.95)	0.72	(0.12 - 0.94)
1986	0.79	(0.20 - 0.96)	0.69	(-0.03 - 0.94)	0.24	(-0.56 - 0.81)
1987	0.91	(0.55 - 0.98)	0.98	(0.90 - 1.00)	0.87	(0.43 - 0.98)
1988	0.89	(0.50 - 0.98)	0.83	(0.30 - 0.97)	0.88	(0.46 - 0.98)
1989	0.87	(0.32 - 0.98)	0.88	(0.36 - 0.98)	0.95	(0.70 - 0.99)
1990	0.75	(0.10 - 0.95)	0.37	(-0.45 - 0.85)	0.34	(-0.48 - 0.84)
1991	0.94	(0.71 - 0.99)	0.69	(-0.03 - 0.94)	0.57	(-0.22 - 0.91)
1992	0.74	(0.15 - 0.94)	0.57	(-0.16 - 0.89)	0.55	(-0.18 - 0.89)
1993	0.78	(0.23 - 0.95)	0.81	(0.31 - 0.96)	0.67	(0.02 - 0.92)
1994	0.92	(0.65 - 0.98)	0.84	(0.41 - 0.97)	0.84	(0.40 - 0.97)
1995	0.89	(0.41 - 0.98)	0.91	(0.49 - 0.99)	0.94	(0.62 - 0.99)
1996	0.78	(0.23 - 0.95)	1		0.89	(0.60 - 0.97)
1997	0.78	(0.25 - 0.95)	0.91	(0.66 - 0.98)	0.97	(0.89 - 0.99)
1998	0.77	(0.22 - 0.95)	0.95	(0.79 - 0.99)	0.94	(0.76 - 0.99)
1999	0.75	(0.18 - 0.94)	0.97	(0.86 - 0.99)	0.94	(0.76 - 0.99)
2000	0.67	(0.01 - 0.92)	0.94	(0.75 - 0.99)	0.87	(0.54 - 0.97)
2001	0.79	(0.25 - 0.95)	0.88	(0.57 - 0.97)	0.94	(0.75 - 0.99)
2002	0.79	(0.27 - 0.95)	0.93	(0.74 - 0.98)	0.97	(0.88 - 0.99)
2003	0.66	(0.00 - 0.92)	0.93	(0.72 - 0.98)	0.98	(0.92 - 1.00)
2004	0.55	(-0.18 - 0.89)	0.89	(0.60 - 0.97)	0.95	(0.80 - 0.99)
2005	0.70	(0.06 - 0.93)	0.84	(0.46 - 0.96)	0.96	(0.82 - 0.99)
2006	0.72	(0.12 - 0.94)	0.89	(0.60 - 0.97)	1	

Supplemental Material, Table 2: Associations between ambient concentrations of NO_2 and postmenopausal breast cancer, Island of Montreal, Canada; fully-adjusted[a] odds ratios calculated per inter-quartile range.

Exposure surface	Inter-quartile range (ppb)	Full dataset. n = 799 (383 cases, 416 controls)		Limited to subject who were residents at the same address for at least 10 years prior to interview. n = 408 (195 cases, 213 controls)	
		OR	95% CI	OR	95% CI
2006	3.7	1.25	0.96-1.63	1.32	0.88-1.97
1996[b]	4.3	1.30	0.99-1.72	1.35	0.84-2.18
Mean of 1996 and 1985[b]	5.0	1.25	0.94-1.64	1.34	0.83-2.16
1985[b]	5.6	1.19	0.91-1.57	1.31	0.82-2.09
1996[c]	4.9	1.30	1.00-1.69	1.35	0.84-2.17
Mean of 1996 and 1985[c]	5.5	1.25	0.96-1.61	1.33	0.84-2.09
1985[c]	6.3	1.20	0.93-1.56	1.32	0.83-2.08

[a] Adjusted for hospital of diagnosis, mother or sister with breast cancer, oophorectomy, years of education, ethnicity, age at menarche, age at first full-term pregnancy, breastfeeding history, oral contraceptive use, hormone replacement therapy use, body mass index, exposure to tobacco smoke, respondent/proxy status, alcohol consumption, history of benign breast disease, occupational exposures to: solvents with reactive metabolites, extremely low magnetic fields, carbon monoxide, and polycyclic aromatic hydrocarbons, and two neighbourhood ecologic covariates: median household income and percentage of adults without a high school diploma. See Table 1

[b] Extrapolated using observed concentrations of NO_2 at each fixed-site monitoring station.

[c] Extrapolated using predicted concentrations of NO_2 derived from the LUR in 2006 at each fixed-site monitoring station.

Supplemental Material, Table 3: Associations between ambient concentrations of NO_2 and postmenopausal breast cancer, Island of Montreal, Canada; with and without bladder cancer controls and proxy respondents.

Exposure Surface	Fully-adjusted[a] odds ratios and 95% confidence intervals, per increase of 5 ppb		
	Full dataset (n = 799)	**Bladder cancer controls excluded (n = 775)**	**Proxy respondents excluded (n = 724)**
2006	1.35 (0.94 – 1.94)	1.31 (0.91 – 1.90)	1.42 (0.96 – 2.09)
1996[b]	1.36 (0.99 – 1. 88)	1.33 (0.95 – 1.84)	1.42 (1.00 – 1.99)
1985[b]	1.17 (0.91 – 1.50)	1.13 (0.88 – 1.46)	1.22 (0.93 – 1.59)
1996[c]	1.31 (1.00 – 1.71)	1.29 (0.98 – 1.70)	1.35 (1.01 – 1.79)
1985[c]	1.16 (0.94 – 1.42)	1.13 (0.92 – 1.39)	1.19 (0.96 – 1.48)

[a] Adjusted for hospital of diagnosis, mother or sister with breast cancer, oophorectomy, years of education, ethnicity, age at menarche, age at first full-term pregnancy, breastfeeding history, oral contraceptive use, hormone replacement therapy use, body mass index, exposure to tobacco smoke, respondent/proxy status, alcohol consumption, history of benign breast disease, occupational exposures to: solvents with reactive metabolites, extremely low magnetic fields, carbon monoxide, and polycyclic aromatic hydrocarbons, and two neighbourhood ecologic covariates: median household income and percentage of adults without a high school diploma. See Table 1.

[b] Extrapolated using observed concentrations of NO_2 at each fixed-site monitoring station.

[c] Extrapolated using predicted concentrations of NO_2 derived from the LUR in 2006 at each fixed-site monitoring station.